Summary

Background: A poor iron status among infants is a prevalent nutrition-related issue, especially in low-income countries. The onset of iron deficiency (ID) has been primary associated with negative long-term impacts on cognitive functioning. ID is regarded to be the main contributor to the onset of anaemia, resulting in iron deficiency anaemia (IDA). Several studies reported distinct differences in infant iron status by gender. Exclusive breastfeeding (EBF) of infants up to the age of six months is recommended as the optimal feeding mode in early infancy. However, there is concern that EBF for this duration may not be optimal with respect to infant iron status, particularly in susceptible infants. Some studies showed that pre-dominant breastfeeding (PDBF) and partially breastfeeding (PBF) of infants before the age of six months are common in Cambodia. Objectives: To investigate the prevalence of poor iron status among five-six months old infants in a rural population in Cambodia. 1.) To measure the prevalence of anaemia, ID and IDA among these infants. 2.) To investigate if sex specific differences in iron status appear. 3.) To research if iron status differs among infants fed on diverse infant feeding practices (EBF, PDBF & PBF). Methods: 404 infants aged five-six months have been enrolled in the period of March-May 2011 at the Pearang Referral Hospital in Prey-Veng province, Cambodia. Anthropometry of infants was obtained for background characteristics. Samples of non-fasting three milliliters venous blood were taken from the infants. Blood haemoglobin (Hb) concentration was assessed by HemoCue® photometer. Plasma ferritin and AGP concentrations were determined using commercial ELISA kits. A semi-structured questionnaire on background characteristics and infant feeding was administered to the mother or guardian of 328 infants. Statistical differences in variables of infant iron status by sex were assessed by independent samples t-tests and Pearson’s chi-square tests. Differences in variables of infant iron status by feeding practice were determined by ANOVA, ANCOVA, Pearson’s chi-square and Kruskal-Wallis tests. A p-value <0.05 was regarded as statistically significant. Results: 56.5% of the infants showed anaemia, 17.6% had ID, while 13.4% showed IDA. Mean blood Hb concentration in females was higher (p-value <0.05, MD 2.6g/l, 95%CI 0.6-4.7g/l) than in male infants. The geometric mean plasma ferritin concentration in female infants was likewise higher (p-value <0.05, MD 7.6μg/l, 95%CI 0.3-16.6μg/l) compared to males. Prevalence of ID was nearly two times higher (p-value <0.01) in males (23.3%) than in females (10.9%). IDA was roughly 2.5 times more frequent (p-value <0.01) in males (18.3%) compared with female infants (7.7%). There was no difference in mean blood Hb concentration and prevalence of anaemia observed between the three feeding groups. In contrast, the difference in geometric mean plasma ferritin concentrations among groups was significant (p-value <0.05) and was lowest in PDBF infants and highest in PBF infants. The prevalence of ID among feeding groups differed (p-value <0.01), with 35.4% in EBF infants, 22.6% in PDBF infants and 13.7% in PBF infants. The occurrence of IDA among groups was lowest in PBF infants (11.6%) and highest in EBF infants (25.0%), but distinction among groups failed to be statistically significant. Furthermore, the prevalence of subclinical inflammation was lower in EBF infants (4.0%) and PDBF infants (6.1%), when compared to PBF infants (16.0%) and the difference between groups was significant (p-value <0.05). Conclusions: Strategies are needed to reduce the prevalence of anaemia and ID/IDA among these infants. It seems that ID is not the main contributor to the onset of infant anaemia in this population. Moreover, there is a need to include sex specific differences into local strategies to prevent ID/IDA. The findings on iron status by gender expose that male infants could have higher iron requirements, hence may be notably more at risk for the onset of ID/IDA. In addition, the prevalences of ID/IDA differed considerably among the feeding groups. Feeding practice was not related to blood Hb concentration and anaemia prevalence. PBF infants seem to have a better iron status compared to PDBF and EBF infants, resulting in a lower risk for the onset of ID/IDA. EBF infants seem to have a higher risk for the onset of ID/IDA. However, PBF infants seem to have a higher risk for the onset of inflammation/infection compared with EBF and PDBF infants.